PARSONS. A LECTURE...ON THE BRAIN AND STOMACH.

A

LECTURE,

ON THE

Connexion and Reciprocal Influence,

BETWEEN THE

BRAIN AND STOMACH;

DELIVERED BEFORE THE

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LECTURE.

MR. PRESIDENT :

Your invitation to appear at this time as a lecturer implied a request that I would, in accordance with past usage on such occasions, address you professionally, by suggesting some useful measures for the preservation and improvement of health. On former occasions, you have been counselled by the learned fathers of the medical profession, who, in addition to their transcendent talents, have enjoyed the privilege of selecting such subjects for their lectures, as were best calculated to interest an audience like the present. Among them, exercise, in reference to physical education, has been repeatedly chosen, and the whole bearing of its influence so ably treated, that nothing new can be added. I am therefore compelled to turn from this more desirable and interesting field of labor, to one less dignified and less susceptible of illustrations and embellishment. It is the connexion and reciprocal influence between the brain and the stomach.

We are taught by Anatomy and Physiology, to consider the human body as made up of two classes of organs and functions, one of them being analogous to vegetable organization, and chiefly concerned in conducting those internal functions and processes, that are essential to the growth and sustenance of the body, the other being added to this, and connecting us with the world around us. The former or internal system of organs and functions constitutes what is termed organic life ; the latter system, being peculiar to animals, is termed animal life. This last mentioned system comprises the organs of sense, and of all voluntary motion, which are immediately connected with, and dependent on, the brain as a common centre and source of nervous influence, where all impressions made on the sentient extremities are received, and from which all the mandates of the will are issued through nervous channels, to the muscles or instruments of motion. Hence the brain has been termed the store-house and work-shop of the mind.

The organic life, or that system of organs concerned in digestion, absorption, circulation, and growth, is placed under the influence of nerves which are remotely and slightly connected with the brain, and are consequently not subjected to the control of the will. Physiologists have placed the centre or focus of the organic system in the epigastric region, or what we commonly call the pit of the stomach, for the reason that the nerves of organic life are more numerous there, and, because of our feeling a peculiar sensation in this region, about the heart and stomach, whenever the organic functions are disturbed by strong mental emotion.

We may here pause for a moment, to admire the wisdom of the Creator, who, in giving us a control over those organs that admit of improvement and education, and require to be exercised, has in infinite goodness placed those of organic life—a momentary suspension of whose action would destroy us—beyond our power of interference. We can exercise the muscles of locomotion, and the voice, in any manner we please, while those parts pertaining to organic life are beyond control. We can neither make the heart pulsate faster or slower, the circulating fluids move with increased or diminished rapidity, nor digestion hasten its process, by any effort of the will; and though we might voluntarily resolve to suspend respiration and feeding, yet the demand of the lungs for vital air, and of the stomach for its supply of food, set up in the form of distress, is too imperious and urgent to be resisted, and would in most instances soon drive us from our resolution. Few, it is believed, however intent on suicide, have been able to accomplish it by refusing to eat, and none by stopping the motions of respiration. The great advantage of this arrangement is furthermore apparent, from its allowing us time to exercise our minds more exclusively on what pertains to animal life. If, in addition to our present occupations, we were obliged to aid the stomach by the will, in dissolving every portion of nutriment, to superintend the beating of the heart, and to regulate the glandular system, some part of so complicated a machine would be neglected. As if to relieve our attention from so disagreeable and unprofitable an occupation, and at the same time to insure their more steady and uninterupted action, by day and night, the Creator has wisely removed, as before observed, all the organs that pertain to our sustenance and growth, beyond the control of the will.

But although the two lives differ essentially in functions, and office, and modes of action, and each has its nervous centre, yet they are held in mutual dependence and sympathy. The appetite, as already observed, stimulates the brain, and causes it to put forth its energies to secure a supply of food; and when it receives a due quantity, the stomach reflects back to the brain a pleasurable sensation of satisfaction and content. The brain in its turn, is invigorated by the nutriment received from the food,

and supplies the muscular system with new energies for obtaining more, and for holding intercourse with the external world, as also for the healthful exercise of the intellectual faculties. If this connexion and reciprocal influence be so apparent in the healthful exercise of the two systems of organs, still more strongly is it manifested in their disordered state. Is the stomach overburdened with excessive repletion, or diseased and debilitated ?—the various functions of animal life are at once impaired ; even a torpid state of the digestive organs clouds the understanding, sheds a gloom over the feelings, and impairs the whole muscular energies ; whilst on the other hand a blow on the head, the centre of animal life, or any violent shock of the mind, as receiving painful intelligence while enjoying a repast, will suddenly interrupt the appetite, and perhaps cause nausea and vomiting, and will impair the energies of the heart, producing coldness of the surface, paleness, and a sensation of faintness.

This intimate sympathy is so strong and direct, that many times the internal organs feel the impression made by the mental emotions, more than the brain and the organs of animal life ; and this has led some eminent physiologists to divide the local habitation of the mind between the two centres of animal and organic life. To the brain, they refer whatever pertains to the understanding, as perception, reflection, memory, attention, judgment, imagination, consciousness and volition ; to the gastric or organic centre they refer the passions, emotions and affections, as love, gratitude, joy, sadness, &c. This seems to be partially recognised in common parlance ; we say, a sound head, to denote what pertains to the understanding ; and, a cold heart, a warm heart, a tender heart, and "bowels of compassion," referring to the passions, affections and emotions ; what is more, we instinctively carry the hand to the forehead, in exercising the reflective faculties, and to the epigastric centre, to denote gratitude, affection, joy and grief.

But this doctrine of two local habitations of the mind has sprung rather from the sympathetic feeling that is experienced, than from any anatomical adaption of structure that would indicate such a division,—a feeling that was bestowed for the purpose, no doubt, of holding the two lives in mutual participation, dependence and co-operation.

In respect to the nerves connected with the two centres, I may observe that those of the stomach are too complicated to admit of being described on the present occasion. Suffice it to say, it is supplied with three kinds of nerves. One confers ordinary sensibility, such as belongs to the system generally, and gives the sensation of pain when any sharp or cutting substance is swallowed. Crude, indigestible substances also give some pain through this nerve. Another kind of nerve confers on the stomach muscular contractility, and performs an important part in digestion. The moment aliment reaches the

stomach, the organ is thrown into a motion called *peristaltic*, which bears some resemblance to that of a creeping caterpillar. By this process, the gastric juice, which distils continually from the whole surface of the organ, is intimately mixed with the food, and dissolves it as water dissolves sugar ; the muscular agitation of the stomach serves the same purpose as stirring the vessel which holds the sugar and water, and is as indispensable to its solution. Dividing these nerves of motion in live animals that have been recently fed, will stop the muscular action, and with it digestion ; but it is a curious fact that a metallic wire, placed between the divided ends of the nerves, will transmit the necessary nervous influence to revive and complete the digestive process; and, what is still more curious, the passage of the galvanic fluid from a small battery to the end of the divided nerve next to the stomach, will revive the motion necessary for digestion, quite as well as the nervous fluid. From these and many other facts and experiments, the bold theory has been advanced, that vital or nervous influence is identical with galvanism. Many more experiments, however, will be required, before this doctrine will gain general admission.

But, to return from this digression, there are, beside the nerves of common sensation and muscular motion, a third set, which preside over the secretion of the gastric juice which dissolves the food, and over the formation and absorption of chyle. These nerves are more abundant about the stomach, heart and liver, than elsewhere, in the form of small knots and plexuses, which constitute what was before termed the epigastric centre, or focus of organic life. The ramifications of this nerve throughout the organic system are innumerable, and hold them together in sympathy, and at every joint of the spine a small thread is sent to the spinal marrow: and it is through these threads that the two centres of organic and animal life act reciprocally on each other.

We will now notice, first, *the influence of the stomach on the brain.* That law of our nature, by which the exercise of any part is attended with a temporary diminution of its vital power, applies with particular force to the stomach. The process of digestion, being chiefly a vital one, is attended with great expenditure of the general nervous energy, proportioned, however to the amount of food taken at any given time. If this be small, the demand made on the system is inconsiderable, and scarcely felt; if the quantity be liberal, as is usual at the dinner hour, the animal functions feel the loss of their energies, now drawn to the stomach to aid the digestive process, but ordinarily in a degree that is comfortably endured, and which after a time is succeeded by renewed vigor of the whole frame. But beyond this, beyond the wants of the system, or the power to digest, its

whole energies are diminished, and the organs of animal life, mental as well as corporeal, are oppressed and disabled.

"The habit of over-feeding prevails in the United States more than in any other part of the world;" and the evils resulting from it are so numerous as to render the subject worthy of serious consideration. Dr. Beaumont, who is the best authority on this point, for the reason that his opinions are founded on an ocular inspection of the action of the stomach, says, there is no question of dietetic economy about which people err so much, as that which relates to *quantity*. "The medical profession, too, has been accessory to this error, in directing dyspeptics to eat until a sense of satiety is felt. Now this feeling, so essential to be understood, never supervenes until the invalid has eaten too much, if he have an appetite, which seldom fails him." There appears to be a sense of perfect intelligence, conveyed from the stomach to the brain, which in health dictates what quantity of aliment (responding to the sense of hunger and its due satisfaction,)is naturally required for the purposes of life; and which, if noticed and properly attended to, would prove the most salutary monitor of health, and effectual preventive of disease. "It is not," says Mr. Combe, "the sense of *satiety*, for that is beyond the point of healthful indulgence, and is Nature's earliest indication of an *abuse* and *over-burden* of her powers to replenish the system. It occurs immediately previous to this, and may be known by the pleasurable sensations of *perfect satisfaction*, *ease*, and *quiesence of body and mind*. It is when the stomach says enough, and is distinguished from satiety by the difference of sensations,—the former feeling *enough*, the latter *too much*. The first is produced by the timely reception into the stomach of proper aliment, in exact proportion to the requirments of Nature, for the perfect digestion of which, a definite quantity of gastric juice is furnished by the proper gastric apparatus. But if we eat more than enough, more than the gastric juice can dissolve, fulness and oppression are almost immediately experienced, and a considerable time must elapse before either body or mind can effectually resume its activity."

High feeding is rendered more injurious to the sedentary who *study*, than to others. It is a law of the animal economy that the circulation is increased in any part of the system which is exercised, and in no organ is this more certain than in the brain. If, then, repletion be great, and the ordinary expenditure lessened by bodily inaction, and if at the same time the brain be greatly exercised, its vessels must become unduly distended, and the student liable to head-ache and fever; while the torpid and engorged state of the liver, induced by the over-feeding and sedentary habit combined, will be likely to give the fever a bilious character. This was manifested a few years since in a college not far from us; a college that is surpassed by none for good order, wholesome discipline and proficiency in scholarship.

Gymnastic exercises were introduced, very much to the delight of the students, and through the summer term you might see them jumping, climbing, and turning somersets, during every leisure moment that could be spared from study,—even the officers mingled in the sport quite as much as comported with official dignity. All were improved in their general tone of health, and all delighted; and their stomachs were soon trained to increased labor, in order to supply the general waste produced by such exercise. The term closed, and during the vacation other exercise was substituted, and with the fall-term commenced again the gymnasium. But soon the novelty wore off, jumping became an old story, the days moreover shortened, and afforded less time for it; but the appetite and powers of digestion, aided perhaps by the bracing air of autumn, continued,—and, between exercise, over-feeding and hard study, more cases of bilious fever occurred in the college that term than I have ever known in any whole year. In accordance with this I have often known the sons of farmers, who, after working hard during the summer, are sent to an academy in the autumn and winter, to suffer from head-aches and sometimes to be attacked with fever.

When, from the causes I have mentioned, a tendency of blood to the head is induced, every one knows from experience that such medicines as act on the biliary and other secretions, and thus turn the circulation from the brain, relieve the head-ache, and improve all the functions of animal life, mental as well as corporeal. But how much more rational it must be to withhold the nutriment, that, with indolence and hard study, is conveyed to the brain to a dangerous extent. In Germany, this thing is better understood than with us. The patient study there pursued by many of the literati, from sixteen to eighteen hours out of the twenty-four, would at our rate of feeding soon produce apoplexy.

Dyspepsia is deemed a sore evil, when there is no doubt that it prolongs tenfold more lives than it shortens. The dangerous acute diseases which excessive plethora causes, are prevented by the failure of the stomach to digest all that our gormandizing cravings would devour. The over-burdened organ, after long abuse, refuses to dissolve an excess of nutriment, and the more it is crowded, the more refractory it becomes, thus warding off a host of diseases, incident to excessive repletion. Let those who lead sedentary lives, and are liable to dyspepsia, pay more attention to their sensations during meal-time, if they wish to avoid not only head-ache, gout, palsy, appoplexy, and acute diseases of the heart, but also dyspepsia, the barrier against these, which kind Nature has interposed, to preserve their lives and punish their follies.

I need not advert to the injurious effects of over-stimulating the brain with distilled or fermented drinks, this subject having been the theme of many a lecture since the beginning of the

temperance reformation. Here the stimulus acts first through the sympathetic nerve, which I spoke of as connecting the two centres of organic and animal life, the brain and stomach. It is the first exhilarating effect produced on the brain and on all its functions; but this is soon followed by a corresponding depression of the animal powers, both of body and mind. Too often does the poet try to speed the wings of his imagination by an exhilarating draught, without seeming to be aware that the adventitious aid thus imparted whirls the fancy beyond the judgment, and leaves the body and soul in a state of listless indolence and sloth.

Is it said that genius is quickened by such stimulus, and its productions are made to smell less of the lamp? They, however, smell more of the decanter, and of the immoral influence that springs from its habitual use. Childe Harold was written when the author practised total abstinence, and Don Juan when he jaded his muse with gin, and a better commentary on its demoralizing and debasing influence could not, need not be offered. It should be remembered that all such artificial impulses are fitful and uncertain, and that he who urges the speed of his mental engine by such heating fuel, hastens the decline of its power, and that he is unprovided with a safety-valve to prevent an apoplectic explosion.

But the over-feeding so common among the studious and sedentary, in the higher and middle classes, is not the only evil that requires correction. There is one of an opposite character, consisting in too much exercise with inadequate nourishment, and which is more peculiar to the laboring poor. And even among the children of wealthier classes, a sufficiency of nourishing food is not always provided with the care which it deserves. Both in families and in boarding-schools it is no uncommon practice to stint the healthy appetite of the young. This error is the parent of that protean malady, the scrofula, which sometimes appears in glandular swellings about the throat. I have seen them induced in adults by low living, which, in connexion with a damp atmosphere, causes the endemic scrofulous swellings about the neck and throat, and the disease called goitre, that are often seen on the shores of lakes and ponds.

Under an impoverished diet, indeed, the moral and intellectual capacity is deteriorated, as certainly as the body; and added to imperfect developement of bodily organization, and a corresponding deficiency of mental power, there is also a diminished capability of resisting the causes of disease. As a general rule it may be stated that, in childhood and youth, when nutrition has not only to supply the continual waste, but is also employed in developing and enlarging the frame, a wholesome, plain diet may be allowed without limitation or restriction, provided that sufficient exercise be allowed in the open air; bearing in mind, however, that when the stomach has been trained to heavy duty

for a long time under severe muscular exercise, there is danger in suddenly suspending that exercise and imposing hard study whilst the full diet is continued.

In mature and middle age, after the effervescence and elasticity of youth are over, greater caution than before is requisite. Growth no longer goes on, and nourishment is needed merely to supply the waste; and accordingly the appetite becomes less keen, and the power of digestion less intense. If the individual continues from habit to eat as heartily as before, even after changing to a sedentary life, the natural vigor of the digestive system may enable it to withstand the excess for a time, but ultimately dyspepsia, or some form of disease dependent on indigestion, will certainly ensue. "The attempt," says Combe, "to combine the appetite and digestive powers of youth with the altered circumstances and comparative inactivity of mature age, is the true source of the multitude of bilious complaints, sick head-aches, and other analogous ailments now so common and so fashionable in civilized society."

Having dwelt as long as time will permit on errors of diet, and on its influence, first on the stomach, and then on the brain, let us now consider the reflex influence of the brain on the stomach.

First. In respect to exercise

Secondly. The influence of the passions, and

Thirdly. The exercise of the intellectual faculties.

1st. The importance of exercise to the healthful developement of the muscular frame is already well understood. Almost every year the Association I have the honor to address, have heard the subject treated by the learned fathers of the profession. To their printed lectures I must refer such of you as were not present when they were delivered, barely remarking that too much importance cannot be attached to this means of improving and preserving the health. Neglect it, and not only do the muscles themselves shrink in volume and strength, but digestion is impaired, local determination of blood to the head induced, and the foundation laid of a thousand complaints that flesh is heir to. Attend to it, and the frame is expanded and strengthened, head-aches are removed, the whole digestive system improved, and numerous organic diseases of the sedentary and indolent, are enprevented.

2dly. *The influence of the passions and emotions on organic life.* This is so sensibly felt in the nerves of organic life, especially in the region of the stomach, that some eminent physiologists, as I before observed, have regarded this region as their throne or centre. When properly regulated, the passions contribute to health and happiness, and are essential incitements to action.

> "On life's vast ocean diversely we sail,
> Reason the card, but passion is the gale."

"It may be affirmed as a general truth that pleasurable emotions and affections are salutary." Their gentle play, especially at the social board, promotes digestion and improves the health. But it is different with painful passions and affections. The poet Armstrong says :

> "Love without hope and hate without revenge,
> And fear, and jealousy, fatigue the soul,
> Engross the subtle ministers of life,
> And spoil the laboring functions of their share.
> Hence the lean gloom that melancholy wears,
> The lover's paleness, and the the sallow hue
> Of envy, jealousy ; the meagre stare
> Of sore revenge ; the cankered body hence
> Betrays each fitful motion of the soul."

The first impression of strong passion and the expression it calls forth, varies somewhat in its character. Strong fear and horror not only destroy the appetite, but debilitate the heart and general circulation, while revenge gives an unnatural excitement that is soon followed by debility. Occasionally, however, it produces a vital expansion that favors the internal organs. "When anger and grief explode, or burst forth into violent action and vociferation, their consequences are less to be dreaded."

> —— "the grief that does not speak,
> Whispers the o'er-fraught heart, and bids it break."

That digestion and secretion are strongly influenced by the passions and violent mental emotions, has been proved by ocular demonstration. Dr. Beaumont found that they caused in his patient an unnatural dryness and redness, and other morbid appearances, in the mucous membrane of the stomach, and impaired the digestive power. Who has not felt the influence of grief, anxiety and misfortune, on his appetite and digestion? When sudden and over-whelming, the effect is more immediate, even arresting the process of deglutition in the very act; and when of a lighter grade, if they long disturb the mental tranquality, need we wonder that dyspepsia, and in the end even graver diseases of the digestive organs, are produced ?

Ambition, an all-prevading and infinitely modified passion, varies in its effects according to its degree and the direction it takes. "When moderate and rightly employed, it proves a wholesome stimulus to exertion," and may thus even promote health; and when directed to objects of benevolence, and to the performance of high moral duties, and excellence in virtue and philanthropy, meeting as it does with little rivalry, it sheds a grateful and salutary influence over the physical, as well as moral constitution of man. But when inordinate, and exercised on objects of self-aggrandizement, it agitates the mind with alternate hope and fear, and engenders feelings of disappointment, shame, jealousy

and envy, that prey on the animal spirits, and oftentimes bring on dyspepsia. It is the intense workings of this passion that produce the sallow and anxious brow, and the dismal train of dyspeptic symptoms, "so often witnessed among the aspirants for literary, professional and political fame. An evil of ambition is its unquenchable, undying character. Love and many other strong passions are satisfied and even surfeited by fruition; but the hunger of ambition grows but the more by feeding;" and when once powerfully excited, how very few have moral and physical force adequate to bear up under the blightings of its aspirations! Although manifested in mature years, its foundation is often laid in childhood by the misdirected pride of parents and teachers; and hence it seemed worthy of notice on the present occasion.

It is highly important to the physical welfare of the body, that the tempers of children be kept cheerful and happy by innocent pleasures and pastimes, and that a proper degree of licenee be permitted in their amusements. However objectionable the ball-room may be, on account of its unwholesome atmosphere, its vain allurements and enticing dissipations, there is every reason to believe that the cheerful exercise of the muscles in dancing, excited and regulated as they are by enlivening music, is beneficial to the health and spirits, as well as conducive to easy and graceful manners, and when convenient should be allowed to children in schools and in the family circle. It is practised by all nations, from the most civilized to the most barbarous, and from the king to the peasant, and may hence be regarded as the expression of nature, or as it has been well called "the poetry of motion." When freed from the objections of the ball-room, and not allowed to encroach on the hours of sleep, none but an ascetic can object to it on the score of morals or religion.

Neglect and harsh treatment sour the temper, and occasion much moral suffering in early childhood, and when long continued, impair digestion and the general health. Shame, grief and fear will often prey on the minds of children in their tender years, rendering them silent and spiritless, and if persevered in, will undermine their health. Home-sickness, which is apt to occur in boarding-schools, being attended with great mental depression, diminishes the appetite, and impairs the power of digestion. "In some instances, so oppressive has been its influence that life itself has yielded to it; as, for example, among soldiers impressed from the peasantry, and forced from the endearments of home into foreign lands." The effects of home-sickness, however, are mostly transient; and the sufferer should be soothed and diverted from its influence by agreeable excitements.

The causes of the passions and emotions to which I have adverted, are not equally operative on the minds and health of all

children. Some are constitutionally phlegmatic, and without any keen susceptibility either to pain or pleasure. But there are others whose feelings readily respond to the slightest influence. These are called sensitive, and it is necessary to be particularly guarded in our conduct towards them. By the exercise of courtesy and good-will, and cultivating the amiable affections, we promote the health of these and of all others around us, and dependant on us. In maturer years, this acute sensibility, if indulged often, ends in an unrestrained and romantic imagination, accompanied with intense feeling, that delights in abstracting itself from the sober realities of life, to mingle with the creations of fancy. How often do we see the poet "starving his grosser powers," whilst "his mind is pampered with aliment too luscious and stimulating." "Who ever saw a 'soft enthusiast' with well-strung nerves and vigorous digestion?"

The nervous and dyspeptic complaints incident to adult persons, whose brain or instrument of the mind is constantly over-excited by emulation, ambition, anxiety, tribulation, and a thousand other causes, are constantly multiplying in frequency and intensity, with the increase of population, and with the march of intellect and refinement. The fury of politics, the jealousies, envyings and rivalries of professions, the struggles for office, the contentions of trade, the excitements of speculation, and the anxieties of commerce, the privations, discontents, and despair of poverty, and various other causes of mental perturbation, induce directly or indirectly, a large proportion of the diseases to which we have referred.

Lastly, let us consider for a moment the influence of the intellectual faculties on the digestive organs. When duly exercised, they give to man his chief superiority over the brute. But the brain, which is the instrument of thought, may, like other organs, be over-worked to a degree that will engender disease, not only in the organ itself, but in the stomach, with which we have shown it to be intimately connected. Its over-exercise is pernicious at any period of life, but particularly so in boyhood and early youth, when its structure is still immature and delicate. The first visible effect is its enlargement, which is attended with corresponding acuteness of mind. "Instead, however," as Mr. Combe says, "of trying to repress its activity, the fond parents, misled by the early promise of genius, too often excite it still farther, by increasing cultivation, and the never-failing impulse of praise and emulation, and finding its progress for a time equal to their warmest wishes, they look forward with ecstacy to the day when its talents will break forth, and shed a lustre on its name. But in exact proportion as the picture becomes brighter to the fancy, the probability of its becoming realized grows less; as the brain, worn out by permature exertion, either becomes diseased or loses its tone, leaving the mental powers slow and depressed for the remainder of life. The ex-

pected prodigy is thus outstripped in the social race, by those whose apparently dull outset promised him an easy victory.

I was recently called to visit a lad about ten years of age, an only son, whose doting parents had fallen into this egregious error, and strange to add, they had aggravated the consequent evils by allowing the child to pore over its Latin and Greek every moment that he was not in school, and to subsist on a full diet of animal food at almost every meal. The consequence was, that his brain was enormously enlarged, the rest of his frame stinted, and his expression of face was that of a person thirty or forty years of age. What was still worse, the over-working of the brain and excessive supply of nourishment had caused an enlargement of the arteries and their branches to such an extent as to produce compression on the optic nerve, and nearly total blindness on one side, and the other eye was beginning to fail. In this state he was taken from school, and was still allowed animal food, and to sit in a warm room, and continue his studies. Now this very early activity and premature developement, so far from deserving encouragement by the stimulus of praise and fond admiration, should have been repressed. It is hardly necessary to add, that the directions given in the case were, to exercise the child's muscles daily to fatigue, in such a way as would be most amusing and interesting, to use friction with a crash-towel, to the trunk and extremities, to withhold nearly all animal food, and to prohibit his looking into a book.

By an erroneous system like that in the foregoing case, commenced in childhood, and continued steadily to puberty, the body is sacrificed to the mind, and the foundation laid of dyspeptic and nervous complaints, that render this early acquired knowledge of no avail in after life. Let the exercise of the mind, therefore, be alternated with that of the body, and its tasks light, and, as far as practicable, amusing. Let it be chiefly of the senses and the memory, in accumulating the raw materials of knowledge, to be compared, abstracted, compounded, and in short, to be worked up into various fabrics, in proportion as the body arrives at maturity.

Even after this period, intense applicaion of the mind will impair the health, unless due attention be paid to diet and regimen. I have dwelt so long on this subject, in discussing the influence of the stomach on the brain, that a few remarks only will be added. The worst forms of dyspepsia and nervous depression are those which arise from intense study, with unrestrained indulgence of the appetite; which confirms the now generally received opinion, that this disease commences as often in the brain as in the stomach. It should ever be borne in mind that the two processes of active thinking and active digestion are incompatible; and that whenever either the brain or the stomach is subjected to hard duty, whether of a single task or of habitual exercise, the other organ should have lighter duty imposed.

When proper regard is paid to these laws, a person of good bodily constitution may endure with safety and for many years a vast amount of mental exercise, and especially of the tranquil kind, as mathematics, history, philosophy, and professional reading and writing. When, however, life begins to wane, every man should moderate his expectations with respect to the exercise and productions of his brain, as well as of his physical system. But, alas! too often the task is continued, till the over-worked brain falls a sacrifice to apoplexy or palsy. It would be interesting to collect the examples of men of intellectual and sedentary habits, who have thus ended their useful career. The two last deceased presidents of Harvard, several professors, the historian of New Hampshire, the author of the American Annals, Chief-justice Parker, and Eddy, Sir Walter Scott, and many others, rush to the mind without scarce a moment's reflection.

The brain, however, requires rest. Even with due attention to diet, the organ may be over-worked to such a degree as to impair the powers of digestion. How often do we see the haggard, dyspeptic clergyman, toil daily in his study to produce sermons that will compare with those of his neighboring brothers, and thus satisfy the claims of his parishoners. He adopts a rigid system of diet, he walks and rides daily, but with little advantage. Why? because he daily returns to his brain-task. He asks leave of absence, and journeys a few hundred miles, to the White Mountains or the Springs, and in a few weeks he returns with renovated spirits, and strengthened powers of digestion. Why? because his brain is at ease, and no longer injures his stomach. The same remark applies to every hard student, to the college professor, preceptor, the common school master, and all whose brain is over-worked, and shows conclusively that rest, entire rest of the brain from hard labor, is occasionally necessary, and in such cases is the only effectual remedy—and also, that the usual vacations in colleges and academies are servicable, if not indispensible to health.

I might here advert to the injurious effects of an opposite kind of treatment on the health,—I mean deficient exercise, which often predisposes to melancholy, indigestion, hysteria and hypochondriasis. How often do we see a nervous young lady, brought up in the lap of ease and indolence, but who, losing an indulgent mother, or meeting with some seeming misfortune, that throws her on her own resources, is roused by the necessity of her situation from her nervous infirmities to healthy and vigorous action. These diseases are often witnessed in those who were previously accustomed to much mental labor, on retiring from active trade, from professional life, or the duties of an instructer. How wise as well as beautiful is the advice of Cicero, who, insisting strenuously on the continuance of mind in the oldest men, if industry remain, yet adds, "Habenda ratio valetudinis; utendum exercitationabus modicis; tantum cibi et potionis

adhibendum, ut reficiantur vires, non opprimantur; nec veró corpori solum subveniendum, est sed menti, atque adeó multó magis, nam haec quoque, nisi tanquam lumini oleum instilles, extinguitur senectute!"*

But I must conclude this brief survey of the subject of corporeal and mental discipline in the words of the poet:—

> "'T is the great art of life to manage well
> The restless mind; Forever on pursuit
> Of knowledge bent, it starves the grosser powers
> Quite unemployed, against its own repose
> It turns its fatal edge, and sharper pangs
> Than what the body knows, embitter life."

I have thus endeavored, ladies and gentlemen, to present a summary view of the reciprocal influence of the two centres of organic and animal life, the stomach and the brain, upon each other, and to show the importance of preserving them in vigorous, harmonious and well-balanced action, in which consists our health and happiness, physical, moral and intellectual.

In concluding this last of the series of lectures, permit me, Mr. President, and Gentlemen of the Institute, to express the high gratification we have received from this your first visit among us. You must have observed the daily increasing interest taken in your meetings and lectures. Had their nature and value been previously known to our citizens, the attendance would have been more prompt, and the benefits greater. But as it is, you have created a lasting impression in favor of your enterprise, your zeal, and philanthropy, that will long redound to the interests of learning in our city.

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*Attention must be paid to health; moderate exercise should be used, food and drink sufficient to refresh, not to load the powers; nor should the body alone be regarded, but also the mind, since this also, unless you feed it as you would a lamp with oil, dies out with old age.

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